

The export performance of Chilean firms: some stylized facts

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Although Chilean exports have performed well in recent decades, they are still largely confined to a few products, a few markets and a small number of firms. The present paper explores this last point, discussing the export behaviour of companies. The main stylized facts are as follows: only a small group of firms are capable of exporting on a permanent basis, and these companies are much larger and have much higher levels of productivity and human capital than the rest.

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I

Introduction

In the last decades of the twentieth century, the external sector of the Chilean economy was characterized by the strong expansion and diversification of exports. The increase in diversification can be appreciated not only in the lessening of the country's heavy dependence on copper exports, which dropped in relative terms from 80% of total exports in the early 1980s to less than 40% in the 1990s, but also in the increasing introduction of new products, the penetration of new markets and the rising number of companies entering international markets.

Between 1970 and 1989 the number of products exported rose from 1,200 to 1,490, and in the 1990-2002 period it rose from 2,300 to 3,750.¹ As for the penetration of new markets, the number of destination countries for Chilean exports rose from 31 in 1970 to over 150 in 2002.

Nonetheless, despite the positive trend of Chile's export performance, which is analysed in greater detail in section II, the data show that the country's exports remain largely confined to a few products, a few markets and a small number of firms. Indeed, 50% of Chilean exports are accounted for by 10 products, 5 markets and 25 companies (ProChile, 2002).

Closely related to this high concentration of exports among a few companies, markets and products is a phenomenon that has not been studied in Chile and that is the main focus of this paper: the existence of a large group of companies that have not succeeded in establishing themselves in international markets. Indeed, almost a third of businesses do not manage to carry on exporting for more than a year.²

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¹ The number of products exported in the years since 1990 cannot be compared with that of previous years because export records were switched in 1989 from the Brussels Tariff Nomenclature to the Harmonized Tariff System, which is more disaggregated.

Although there have been different studies into the impact that trade liberalization in Chile has had on growth and productivity,³ there is not much evidence about the causes of export dynamism. Some recent contributions are those of Agosin (1999), who studies the determinants of growth in manufacturing exports, and Gutiérrez de Pinheres and Ferrantino (1997), who analyse the macroeconomic factors that have influenced the diversification of Chilean exports.

Nonetheless, there is little empirical information about export performance at the company level. Two studies are exceptions here: that of Álvarez and Crespi (2000a and 2000b), which investigated the impact of the instruments administered by ProChile on the performance of companies and concluded that they had a positive effect on the businesses using them, increasing the number of markets and the value of exports; and that of Macario (2000), which uses a sample of exporters to investigate the factors underlying the decision to export, the potential benefits that could be internalized by exporters and the role that promotional instruments have had on export dynamism.

A line of research dealing with the microeconomic underpinnings of export performance has been developed over recent years, initiated by a World Bank project whose objective was to analyse the factors leading companies to make the decision to export, and the consequences of this decision (World Bank, 1996). One of the main conclusions of these studies is that entering international markets involves sunk costs so that companies, once they have become exporters, will tend to continue exporting even if conditions take a turn for the worse (Roberts and Tybout, 1997; Bernard and Jensen, 2001). As was shown in an earlier paragraph, though, the Chilean case contradicts this assertion. A large group of companies begin exporting but do not persist with it.

This being so, the objective of this paper is to determine the main stylized facts of Chilean

² This annual exit rate has tended to hold steady at around 30% in recent years, except 2000 when it was almost 40% (see table 8 below for details).

³ Such as Rojas, López and Jiménez (1997), García, Meller and Repetto (1996), Fuentes (1995), Figueroa and Letelier (1994), Marshall (1992) and Tybout, De Melo and Corbo (1991).

companies' export behaviour and draw some conclusions about the main factors that bring success in international markets.

Section II below analyses the background to Chile's current export performance. Section III looks

at the characteristics of firms that export and those that do not. Section IV presents the sources of the data and sums up the main stylized facts of company export performance in the 1990s, while section V sets forth the main conclusions.

II

The background to Chile's export performance

1. Export growth and diversification

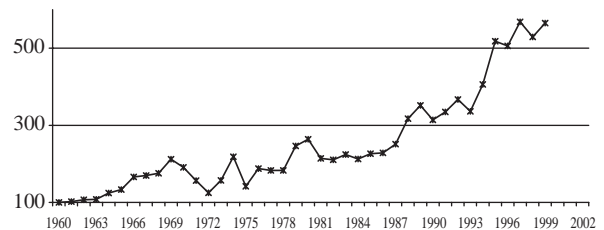
One of the main benefits of the trade liberalization that began in the 1970s was the lessening of the anti-export bias implicit in the import substitution model. Rationalization of the complex structure of trade barriers and the application of certain incentive policies opened the way for greater growth and diversification of Chilean exports. These policies included, in particular, the introduction of simplified refunds, the use of debt conversion programmes that facilitated foreign investment in the exportable sector, active State participation in the provision of information, subsidies in the forestry sector, and exchange-rate policy from 1982 onward (Agosin, 1999).

As figure 1 shows, exports grew very slowly prior to trade liberalization. From the mid-1980s onward, however, export sector growth was much higher than in previous decades. Between 1960 and 1973 average annual export growth was 3.5%, and in 1973-1983 the rate was similar, at 3.6% a year. Between 1983 and 2002, though, the most rapid growth in the export sector was seen, with an average annual rate of 5.5%.⁴

This export growth was accompanied by significant diversification.⁵ As table 1 shows, in 1960-1973 the mining sector generated over 80% of total Chilean exports. In the 1970s and 1980s, however, this share fell to 66.8% and 55.4%, respectively, and in the 1990s it fell below 50%. At the same time, sectors involved with the exploitation of natural resources

FIGURE 1

Chile: Exports, 1960-2002^a
(Index: 1960=100)



Source: Prepared by the author from Central Bank of Chile figures.

^a Nominal exports were deflated using the Central Bank of Chile external price index.

increased their exports sharply. Between the pre-liberalization period and the late 1990s the agricultural sector increased its share in Chilean exports from 3.2% to 10.1%, the fisheries sector from 1.8% to 3.9%, and the forestry sector from 1.9% to 7.9%. However, the greatest increase was experienced by manufacturing industry, whose share of total exports rose steadily from 10.1% to 41.9%.

2. Recent export performance

If we take only the 1990s, we can identify some additional characteristics of the Chilean export diversification process. On the whole, the economy was quite successful in exporting new products, opening up new markets and bringing new companies into the export process. Between 1990 and 2002, the number of products exported rose from 2,300 to 3,750, the number of destination markets from 129 to 158, and the number of export companies from 4,100 to 6,188 (table 2). These

⁴ See Ffrench-Davis (2002) for an analysis of the relationship between exports and growth in Chile.

⁵ Álvarez and Lemus (2001) found that exports had begun to diversify more slowly in the second half of the 1990s, which is consistent with the exchange-rate appreciation of the period.

TABLE 1

Chile: Exports by sector, selected periods
(Percentages)

| Period | Mining | Agriculture | Fishing | Forestry | Manufacturing |
|-----------|--------|-------------|---------|----------|---------------|
| 1960-1973 | 86.5 | 3.2 | 1.8 | 1.9 | 10.1 |
| 1974-1980 | 66.8 | 5.5 | 4.0 | 7.3 | 27.0 |
| 1981-1990 | 55.4 | 10.2 | 7.4 | 7.9 | 32.3 |
| 1991-1999 | 45.9 | 10.1 | 3.9 | 7.9 | 41.9 |

Source: Álvarez and Lemus (2001).

TABLE 2

Chile: Export performance indicators, 1990-2002

| Indicator | 1990 | 1994 | 1998 | 2002 |
|-----------|-------|-------|-------|-------|
| Companies | 4 100 | 5 844 | 5 847 | 6 118 |
| Products | 2 300 | 3 622 | 3 828 | 3 750 |
| Markets | 129 | 141 | 172 | 158 |

Source: DIRECON (1999) and ProChile (2002).

export performance indicators are a substantial improvement on those of previous decades.⁶

Despite the progress with exports in Chile, these are still largely confined to a few products, a few markets and, above all, a small number of companies. As table 3 shows, just 25 companies generate almost half of all Chilean exports. If we add firms exporting between US\$ 10 million and US\$ 100 million worth of goods, less than 4% of companies account for more than 80% of total exports.

The degree to which exports are concentrated among a small number of products can be appreciated in table 4. Although the country exported over 3,800 products in 2002, 51.1% of exports were accounted for by the 10 main export products alone.

The situation has improved in relation to earlier decades, however. As table 5 shows, in 1970 the top 10 export products represented almost 90% of Chilean exports. This share had fallen to 70% by 1980 and 59.8% by 1994.

Table 6 shows that, although new markets have been opening up and exports now go to over 150 countries, some 50% of Chilean exports go to just five of these.

The historical comparison reveals that the concentration of exports in a small number of markets

has not changed significantly over time. As table 7 shows, during the “closed economy” period (1960-1973) the top five destination countries took 51.6% of Chilean exports. In 1991-1999, the share of these five markets averaged 48.9%.

3. Entry and exit of exporting firms

Despite the significant growth in the number of exporters, there is a disturbing phenomenon which is the main theme of this study. This is exporters’ lack of staying power in international markets. There is evidence that almost a third of companies that begin exporting do not continue to do so for more than a year. A similar proportion consists of firms that enter international markets without having exported the previous year. As table 8 shows, during 1995-1999 only 65% or so of approximately 6,000 exporters were companies that had been steady exporters for over a year.

The information given in this section reveals the existence of a phenomenon worthy of study. Although diversification indicators for Chilean exports have progressed positively and it is more or less generally agreed that the export sector is significantly more diversified now than in earlier decades, there are still some major problems, such as the high entry and exit level among export firms. Although studies have dealt with this subject in relation to other economies around the world, in Chile empirical evidence is lacking.

If export companies were better established, this could help reduce the concentration of Chilean exports by introducing new products and opening up new markets. As the following section shows, companies that export on a permanent basis sell more products in international markets and reach a larger number of markets. Thus, the connection between export diversification and the consolidation of companies as exporters consists in the fact that companies which are always exporting are better placed to bring new products and markets to the Chilean export basket.

⁶ See Ffrench-Davis and Sáez (1995).

TABLE 3

Chile: Number of companies and export share, 2002

| Amount exported (dollars) | No. of companies | % of companies | Exports (millions of dollars) | % of exports |
|---------------------------|------------------|----------------|----------------------------------|--------------|
| Less than 100 000 | 3 656 | 59.8 | 78.2 | 0.4 |
| 100 000 to 1 million | 1 483 | 24.2 | 540.9 | 3.1 |
| 1 to 10 million | 757 | 12.4 | 2 474.8 | 14.2 |
| 10 to 100 million | 197 | 3.2 | 5 773.7 | 33.1 |
| Over 100 million | 25 | 0.4 | 8 562.6 | 49.1 |

Source: ProChile (2002).

TABLE 4

Chile: Main products exported, 2002
(Millions of dollars and percentages)

| Product | Millions of dollars | % |
|----------------------------------------------------|---------------------|------|
| Copper cathodes | 4 095.3 | 23.5 |
| Copper ores and concentrates | 1 734.3 | 9.9 |
| Fresh grapes | 543.6 | 3.1 |
| Coniferous cellulose, semi-bleached or bleached | 497.9 | 2.9 |
| Wines with denomination of origin | 471.8 | 2.7 |
| Boards sawn from pine | 38.8 | 2.2 |
| Fishmeal | 318.3 | 1.8 |
| Salmon fillets and meats, fresh or chilled | 300.8 | 1.7 |
| Methanol | 300.4 | 1.7 |
| Copper for refining | 253.7 | 1.5 |
| <i>Total</i> | 8 898.9 | 51.1 |

Source: ProChile (2002).

TABLE 5

Chile: Share of the 10 leading export products, selected years
(Percentages)

| Year | % |
|------|------|
| 1970 | 89.8 |
| 1980 | 70.0 |
| 1985 | 70.6 |
| 1990 | 67.5 |
| 1992 | 64.2 |
| 1993 | 59.5 |
| 1994 | 59.8 |

Source: Ffrench-Davis and Sáez (1995).

TABLE 6

Chile: Top destination markets, 2002

| Country | Export share (%) |
|----------------|---------------------|
| United States | 19.8 |
| Japan | 10.8 |
| China | 7.0 |
| Mexico | 5.2 |
| United Kingdom | 4.9 |
| <i>Total</i> | 47.7 |

Source: ProChile (2002).

TABLE 7

Chile: Export share of top destination markets, selected periods
(Percentages)

| Period | 5 countries | 10 countries | 15 countries | 20 countries | 25 countries |
|-----------|----------------|-----------------|-----------------|-----------------|-----------------|
| 1960-1973 | 51.6 | 78.2 | 90.8 | 93.3 | 97.7 |
| 1974-1980 | 47.0 | 70.1 | 81.3 | 89.5 | 92.1 |
| 1981-1990 | 47.7 | 68.0 | 81.6 | 87.8 | 89.9 |
| 1991-1999 | 48.9 | 66.3 | 81.3 | 87.3 | 89.9 |

Source: Álvarez and Lemus (2001).

TABLE 8

Chile: Companies entering and exiting the export trade, 1995-2002
(Number of companies and percentages)

| Year | Entering | | Exiting | | Constant | | Total |
|------|----------|------------|---------|------------|----------|------------|-------|
| | Number | Percentage | Number | Percentage | Number | Percentage | |
| 1995 | 2 066 | 35.5 | 2 093 | 36.0 | 3 748 | 64.50 | 5 813 |
| 1996 | 2 094 | 36.1 | 2 102 | 36.2 | 3 711 | 63.90 | 5 805 |
| 1997 | 1 988 | 34.5 | 2 026 | 35.1 | 3 779 | 65.50 | 5 767 |
| 1998 | 2 007 | 34.3 | 1 927 | 33.0 | 3 840 | 65.70 | 5 847 |
| 1999 | 2 121 | 35.2 | 1 946 | 32.3 | 3 901 | 64.80 | 6 022 |
| 2000 | 1 826 | 32.2 | 2 182 | 38.5 | 3 840 | 0.68 | 5 666 |
| 2001 | 2 174 | 36.2 | 1 831 | 30.5 | 3 835 | 0.64 | 6 009 |
| 2002 | 2 164 | 35.4 | 2 055 | 33.6 | 3 954 | 0.65 | 6 118 |

Source: ProChile (2000 and 2002).

III

The characteristics of export firms

1. Data sources

To study the characteristics of companies and their export status, two complementary information sources are available. First, there are the export statistics of the Central Bank of Chile, using National Customs Department data. This database contains information on all exporters for the period 1991-1999, covering export performance variables such as the value of exports (measured in dollars), the number of destination markets (or countries exported to) and the number of products exported. The second source is the database of the Yearly National Industrial Survey (*Encuesta Nacional de Industria Anual*, ENIA) for the 1990-1996 period, which contains information on various company characteristics such as employment, value-added, sales and investment, which can be important in explaining their export performance.

One of the shortcomings of the first of these information sources is that importers returning goods are recorded as exporters in the data generated by the National Customs Department. This suggests that the number of export firms is being overestimated, particularly in the case of occasional exporters. Furthermore, it lacks information on variables other than the export behaviour of companies.

One failing of the ENIA is that it only has information on the value of exports and not on destination markets or the products exported. In addition, this survey is only applied to manufacturers.

For these reasons, the following analysis will use both sources of information in a complementary fashion.

2. Some stylized facts

The Central Bank information can be used to analyse the main characteristics of the entry and exit dynamic of export firms in the 1991-1999 period, identifying the main stylized facts of this.

To this end, companies that export have been divided into two groups: permanent exporters, defined as companies that have pursued their export activity in every year studied, and occasional exporters, i.e., those that enter international markets but then withdraw from them in a subsequent year.

a) A majority of firms are not permanent exporters

One of the main stylized facts is that the company entry and exit rate is quite high. During the 1991-1999 period, in fact, just 6% of companies can be classified as permanent exporters, while the other 94% are occasional exporters (table 9).

As the period of analysis is reduced, however, and the criterion for defining permanent exporters is accordingly relaxed to some degree, the proportion of such firms in the total rises. In fact, the shorter the time interval analysed, the higher the percentage of companies that can be defined as permanent exporters. If the 1996-1999 period is taken, 23% of companies exported in every year of the period and 77% did so

TABLE 9

Chile: Exporters by category and period
(Number of companies and percentages)

| Period | Occasional | | Permanent | | Total No. |
|-----------|------------|------|-----------|------|--------------|
| | No. | % | No. | % | |
| 1991-1999 | 16 255 | 94.1 | 1 015 | 5.9 | 17 270 |
| 1992-1999 | 14 597 | 92.4 | 1 198 | 7.6 | 15 795 |
| 1993-1999 | 13 016 | 90.2 | 1 420 | 9.8 | 14 436 |
| 1994-1999 | 11 487 | 87.3 | 1 667 | 12.7 | 13 154 |
| 1995-1999 | 9 739 | 83.3 | 1 949 | 16.7 | 11 688 |
| 1996-1999 | 7 897 | 77.3 | 2 326 | 22.7 | 10 223 |

Source: Prepared by the author from Central Bank of Chile statistics.

occasionally. Although the percentage of occasional exporters is lower in this case, it remains large.

b) *The evidence is similar at the sectoral level*

A second stylized fact is that at the sectoral level, likewise, it transpires that most firms that export do so only occasionally.

Nonetheless, some differences should be pointed out. As table 10 shows, in the 1991-1999 period about 18% of export firms in the copper and iron sector could be classified as permanent exporters. Other sectors in which permanent exporters represented a large share were non-ferrous metals (14.2%), petroleum and its derivatives (12.9%), plastics (11.5%), paper and cellulose (11.1%) and other ores and stones (11%). In sectors such as services, wooden furniture, transport equipment and coal, by contrast, the overwhelming majority of exporters were occasional.

c) *There are differences between companies at the outset of the export process*

A third important characteristic is that companies defined as permanent exporters have better export performance indicators at the outset than companies that are occasional exporters.

Table 11 shows the results of comparing the two groups of companies over the whole of the 1991-1999 period and a more recent period, 1996-1999. For both periods, exporters were classified as occasional and permanent, as the case might be, and then a mean difference test was carried out for three initial export performance indicators: value of exports, destination markets, and number of products exported.

For all the indicators analysed, the initial performance of permanent exporters was better than that of occasional exporters. In all cases, furthermore, the mean difference was statistically significant.

TABLE 10

Chile: Exporters by category and sector, 1991-1999
(Percentages)

| Sector ^a | Description | Occasional (%) | Permanent (%) |
|---------------------|------------------------------------|----------------|---------------|
| 111-130 | Agriculture and fishing | 92.3 | 7.7 |
| 220 | Copper and iron | 82.1 | 18.0 |
| 212 | Coal | 100.0 | 0.0 |
| 230-240 | Other ores and stones | 89.0 | 11.0 |
| 311-313 | Food, drink and tobacco | 90.1 | 9.9 |
| 321 | Textiles | 94.3 | 5.7 |
| 322 | Wearing apparel, except footwear | 97.0 | 3.0 |
| 323-324 | Leather products and footwear | 93.7 | 6.3 |
| 331 | Wood products, except furniture | 94.0 | 6.0 |
| 332 | Furniture, except metal | 98.7 | 1.3 |
| 341 | Paper and cellulose | 88.9 | 11.1 |
| 342 | Printing and publishing | 94.8 | 5.2 |
| 351-352 | Chemicals | 91.1 | 8.9 |
| 353-354 | Petroleum and derivatives | 87.1 | 12.9 |
| 361 | Pottery | 95.7 | 4.3 |
| 362 | Glass | 88.5 | 11.5 |
| 369 | Other | 92.1 | 7.9 |
| 371 | Basic iron and steel industries | 93.0 | 7.0 |
| 372 | Non-ferrous metals | 85.9 | 14.2 |
| 381 | Metal products | 93.8 | 6.2 |
| 382 | Machinery, except electrical | 96.8 | 3.3 |
| 383 | Electrical machinery and equip. | 96.7 | 3.3 |
| 384 | Transport equipment | 99.4 | 0.6 |
| 385 | Professional and scientific equip. | 96.4 | 3.6 |
| 390 | Other industries | 95.5 | 4.5 |
| 900 | Services | 97.6 | 2.4 |

Source: Prepared by the author from Central Bank of Chile statistics.

^a According to the International Standard Industrial Classification of All Economic Activities (ISIC).

In the 1991-1999 period, permanent exporters exported an average of US\$ 3.4 million more in the first year (1991) than those that failed to establish themselves in international markets. Furthermore, they had almost three destination markets more and exported three additional products. The results are similar if the period of comparison is 1996-1999, except for the products exported, the difference between permanent and occasional exporters here being not three but over four products.

d) *The market effect does not seem to be important*

Whether a company is a permanent or occasional exporter could have something to do with the export market being served. This market effect would arise if some countries made greater use of protectionist trade policies that were detrimental to the participation of Chilean companies in international markets.

TABLE 11

Chile: Performance indicators by company category, selected periods

| Variable | Permanent | Occasional 1991-1999 | Difference ^a | Permanent | Occasional 1996-1999 | Difference ^a |
|----------------------|-----------|-------------------------|-------------------------|-----------|-------------------------|-------------------------|
| Exports ^b | 4.6 | 1.1 | 3.4 (2.38) | 4.9 | 1.4 | 3.5 (2.39) |
| Markets | 4.7 | 1.8 | 2.9 (27.86) | 4.6 | 1.6 | 3.0 (27.11) |
| Products | 7.0 | 3.9 | 3.1 (10.02) | 7.9 | 3.6 | 4.3 (12.02) |

^a The figures in brackets are equal mean t statistics.

^b Measured in millions of current dollars.

TABLE 12

World: Distribution of occasional and permanent exporters among Chile's trading partners, 1991-1999

| Trading partner | Occasional | | Permanent | | Total No. |
|-------------------------------------|---------------|-------------|--------------|------------|---------------|
| | No. | % | No. | % | |
| European Union | 2 357 | 93.3 | 170 | 6.7 | 2 527 |
| North American Free Trade Agreement | 3 009 | 92.6 | 241 | 7.4 | 3 250 |
| Mercosur | 4 668 | 95.9 | 202 | 4.1 | 4 870 |
| Rest of Latin America | 4 905 | 95.3 | 240 | 4.7 | 5 145 |
| Japan | 379 | 82.8 | 79 | 17.2 | 458 |
| Other Asia ^a | 270 | 93.4 | 19 | 6.6 | 289 |
| Rest of world | 667 | 91.2 | 64 | 8.8 | 731 |
| <i>Total</i> | <i>16 255</i> | <i>94.1</i> | <i>1 015</i> | <i>5.9</i> | <i>17 270</i> |

Source: Prepared by the author from Central Bank of Chile statistics.

^a Includes China, Indonesia, Malaysia, Philippines, Republic of Korea, Singapore, Taiwan Province of China and Thailand.

To analyse this, companies were classified by the main destination markets for Chilean exports. Although a company may export to several countries, in this case the classification was based on the main destination country of each firm's exports.⁷ According to table 12, the phenomenon described does not seem to arise. The exception is Japan, where the proportion of permanent exporters is higher (17.2%), but in the case of Chile's other trading partners the distribution is similar between the two groups of companies.

It could be surmised that a large percentage of occasional exporters were carrying out "border trade", a transitory form of small-scale trading that depends on fortuitous circumstances and is not necessarily

driven by business strategies and/or comparative advantage.⁸ If this were so, the likelihood of being an occasional exporter would be greater if the company concerned exported mainly to neighbouring or nearby countries. And in fact, the percentage of Chilean exporters that fail to establish themselves is higher among those which sell to Mercosur and other Latin American countries, and the differences are statistically significant, albeit not large.⁹

⁸ I am indebted to Dominique Hachette for this point.

⁹ To explore this phenomenon, a probit model was estimated with a dichotomous dependent variable of 1 for permanent exporters and 0 for the rest (occasional exporters). A categorical market variable was included as an explanatory variable. The parameters for Mercosur and the other Latin American countries were negative and significant, but yielded a small difference of only 2 to 3 percentage points.

⁷ For example, a company exporting mainly to Argentina is classified as an exporter to Mercosur.

TABLE 13

Chile: Classification of companies by export status, by sector
(Percentages)

| Sector | Non-exporters | Occasional exporters | Permanent exporters | Occasional exporters as proportion of the total |
|-----------------------------|---------------|----------------------|---------------------|-------------------------------------------------|
| Foods | 77.1 | 17.4 | 5.5 | 76.0 |
| Fodder | 59.6 | 30.3 | 10.1 | 75.0 |
| Beverages | 54.5 | 30.4 | 15.2 | 66.7 |
| Tobacco | 20.0 | 80.0 | 0.0 | 100.0 |
| Textiles | 71.6 | 22.7 | 5.7 | 79.9 |
| Wearing apparel | 79.7 | 18.6 | 1.7 | 91.7 |
| Leather products | 63.5 | 32.4 | 4.1 | 88.9 |
| Footwear | 70.3 | 25.2 | 4.5 | 84.8 |
| Wood, exc. furniture | 70.6 | 23.9 | 5.5 | 81.2 |
| Furniture, exc. metal | 85.0 | 12.4 | 2.6 | 82.9 |
| Paper and cellulose | 48.5 | 39.8 | 11.7 | 77.4 |
| Printing and publishing | 81.3 | 17.3 | 1.4 | 92.3 |
| Industrial chemicals | 48.1 | 36.8 | 15.1 | 70.9 |
| Other chemicals | 49.8 | 37.0 | 13.2 | 73.6 |
| Petroleum refineries | 0.0 | 0.0 | 100.0 | 0.0 |
| Petroleum derivatives | 42.9 | 42.9 | 14.3 | 75.0 |
| Rubber products | 71.1 | 18.4 | 10.5 | 63.6 |
| Plastic products | 67.3 | 28.3 | 4.5 | 86.4 |
| Pottery | 70.0 | 16.7 | 13.3 | 55.6 |
| Glass | 47.6 | 23.8 | 28.6 | 45.5 |
| Other non-metal ores | 89.0 | 8.6 | 2.4 | 78.3 |
| Basic iron and steel inds. | 64.6 | 20.8 | 14.6 | 58.8 |
| Non-ferrous metals | 37.5 | 41.1 | 21.4 | 65.7 |
| Metal products | 80.4 | 16.8 | 2.8 | 85.7 |
| Machinery, exc. electr. | 77.9 | 18.5 | 3.7 | 83.3 |
| Machinery, electrical | 52.9 | 38.8 | 8.2 | 82.5 |
| Transport equipment | 74.6 | 23.1 | 2.4 | 90.7 |
| Prof. and scientific equip. | 54.5 | 36.4 | 9.1 | 80.0 |
| <i>Total</i> | <i>73.0</i> | <i>21.5</i> | <i>5.6</i> | <i>79.4</i> |

Source: Prepared by the author from ENIA information.

e) *The evidence is similar in manufacturing industry*

Using ENIA information prepared by the National Institute of Statistics for all the years from 1990 to 1996, a third group of companies can be added, those that do not export.

Table 13 shows the threefold distribution of manufacturing firms by export status. Most companies in the industrial sector (73%) are not exporters, 21.5% export occasionally and just 5.6% can be categorized as permanent exporters. If only companies that do export are taken, almost 80% are not permanent exporters.

This result for manufacturing industry is consistent with that for exporters generally (see table 9 above). Using ENIA data, which do not include the importers categorized as exporters in the Central Bank information, it is still valid to say that a majority of exporters are firms which are unable to maintain themselves in international markets. In other words, the large presence of occasional exporters is found

irrespective of the database used to define the two groups of companies and the period considered.

When the distribution of companies by sector is analysed, it can be inferred that, with a few exceptions, most exporters are occasional.

There is a possibility that the proportion of exporters that are occasional is being exaggerated because some of them are companies which have not only ceased to export, but have left the market.¹⁰ If we only consider companies that remained in the market for the seven years studied, the proportion of exporters failing to establish themselves does fall, but remains high.

Taking companies that remained in the market for the full period in relation to the whole sample, the percentage of non-exporters falls from 73% to 64.2%,

¹⁰ I am indebted to Bernardita Escobar for this point.

that of occasional exporters rises from 21.5% to 23.1%, and that of permanent exporters rises to 12.7%. This means that, even considering the group of firms that survived for the whole study period, most companies

that export do so only occasionally. The main reason for this predominance of occasional exporters is that companies leaving the market have mainly been non-exporters.

IV

Comparative performance across groups of companies

Different empirical studies have confirmed that exporters evince better characteristics than companies that sell only in the domestic market. On the whole, exporting firms are larger, more productive and more capital- and technology-intensive, and pay higher wages.¹¹

To assess whether this held true for Chile, the characteristics of manufacturing firms were studied in the three groups defined earlier. Figure 2 shows some indicators of size, productivity and physical capital density for non-exporters, occasional exporters and permanent exporters.

The indicators of size, such as sales and employment, show that permanent exporters are “larger” than companies that do not export or do so only occasionally. Non-exporters and occasional exporters are only about 20% and 40% as large, respectively, as permanent exporters.

As regards labour productivity, measured by value-added per worker and the average wage, the differences between groups of companies are also quite large. Permanent exporters are “more productive” than companies which export occasionally and, to an even greater degree, than non-exporters. These productivity differences could be due to disparities in capital-intensiveness. Figure 2 shows that permanent exporters are more capital-intensive than occasional exporters and non-exporters.

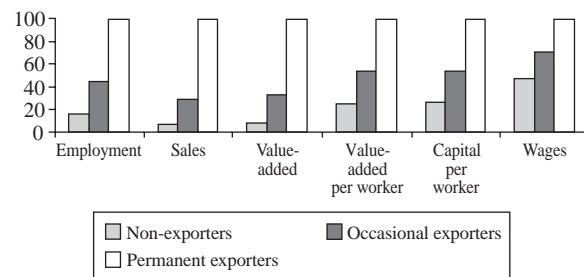
Following Bernard and Jensen (1999),¹² the following calculation was made to check whether

¹¹ A variety of studies document this: for example, Bernard and Jensen (1999) for the United States, Bernard and Wagner (2001) for Germany, Isgut (2001) for Colombia and Baldwin and Gu (2003) for Canada.

¹² By contrast with the present work, the authors cited apply the methodology to just two groups of companies, exporters and non-exporters.

FIGURE 2

Chile: Comparative performance by company type, 1990-1996 average
(Index: Permanent exporter = 100)



Source: Prepared by the author from ENIA information.

permanent exporters performed significantly better than the rest when a broader range of indicators was used:

$$Y_{it} = \alpha_0 + \alpha_1 D_i^{ES} + \alpha_2 D_i^P + \alpha_3 Z_{it} + \varepsilon_{it}$$

where Y is some variable that is characteristic of the company (measured as a logarithm), D^{ES} is a categorical variable if the company is an occasional exporter, D^P is a categorical variable if the company is a permanent exporter, Z is a vector of control variables, such as year and production sector, i denotes the company and t the year. Companies are compared by including a categorical variable by sector, considering the differences associated with the sector they belong to. In other words, what is analysed is whether exporters display better characteristics than non-exporters within a given sector. The sectors are taken from the three-digit International Standard Industrial Classification of All Economic Activities (ISIC).

If α_j is positive, we can infer that occasional exporters perform better than non-exporters.

Analogously, if α_2 is positive and greater than α_1 , then permanent exporters have superior characteristics to occasional exporters and non-exporters.

The results of the estimates are given in table 14. The second column of the table shows the parameter associated with the variable which identifies occasional exporters (α_1), while the third column shows the parameter of the variable identifying permanent exporters (α_2). The last column shows the difference between the two parameters ($\alpha_2 - \alpha_1$). This difference can be interpreted as a kind of "reward" for a company's establishing itself as an exporter by moving from occasional exporting to permanent exporting.

The results of the estimates show that the parameter α_1 is always positive and significant, allowing us to infer that occasional exporters perform better than non-exporters. In terms of size, the former have almost twice as many workers and generate

TABLE 14
Chile: Comparison of characteristics across groups of companies^{a b}
(1990-1996 average)

| Variable | Occasional exporters | Permanent exporters | Difference |
|--------------------------------------|----------------------|---------------------|-------------------|
| Total employment | 0.92 (79.07) | 1.78 (99.13) | 0.86 |
| Value-added | 1.38 (77.96) | 2.70 (97.97) | 1.32 |
| Sales | 1.37 (78.78) | 2.65 (99.17) | 1.28 |
| Gross value | 1.33 (7.65) | 2.57 (98.18) | 1.24 |
| Capital stock | 1.59 (70.14) | 3.01 (90.97) | 1.42 |
| Value-added per worker | 0.47 (40.51) | 0.92 (51.15) | 0.47 |
| Gross value per worker | 0.41 (38.38) | 0.78 (47.44) | 0.37 |
| Sales per worker | 0.43 (37.66) | 0.85 (47.89) | 0.42 |
| Average pay | 0.32 (45.80) | 0.62 (58.17) | 0.30 |
| Average white-collar pay | 0.45 (50.30) | 0.82 (59.46) | 0.37 |
| Average blue-collar pay | 0.20 (30.53) | 0.43 (42.15) | 0.23 |
| Capital per worker | 0.69 (42.54) | 1.24 (50.04) | 0.55 |
| Skilled staff as proportion of total | 0.09 (9.12) | 0.20 (13.58) | 0.11 |
| Expenditure on sales licences | 0.06 (2.11) | 0.11 (2.48) | 0.05 ^c |

^a The figures in brackets are t statistics.

^b The table does not include the parameters of the constant term or the categorical variables by production sector.

^c Not significant at 5%.

TABLE 15

Chile: Comparison of initial characteristics across groups of export companies^{a b}

| Variable | Occasional exporters | Permanent exporters | Difference |
|--------------------------------------|----------------------|---------------------|-------------------|
| Total employment | 0.89 (26.8) | 1.73 (35.9) | 0.84 |
| Value-added | 1.41 (27.5) | 2.68 (36.0) | 1.27 |
| Sales | 1.37 (28.5) | 2.59 (37.0) | 1.22 |
| Gross value | 1.30 (27.6) | 2.48 (36.0) | 1.18 |
| Capital stock | 1.53 (25.3) | 2.91 (33.1) | 1.38 |
| Value-added per worker | 0.52 (15.5) | 0.95 (19.4) | 0.43 |
| Gross value per worker | 0.42 (14.1) | 0.75 (17.3) | 0.33 |
| Sales per worker | 0.47 (14.6) | 0.84 (18.0) | 0.37 |
| Average pay | 0.34 (17.2) | 0.64 (22.4) | 0.30 |
| Average white-collar pay | 0.50 (19.1) | 0.90 (23.6) | 0.40 |
| Average blue-collar pay | 0.22 (11.8) | 0.43 (16.1) | 0.21 |
| Capital per worker | 0.67 (14.7) | 1.21 (18.4) | 0.54 |
| Skilled staff as proportion of total | 0.09 (3.6) | 0.19 (5.1) | 0.10 |
| Expenditure on sales licences | 0.05 (2.1) | 0.09 (2.8) | 0.04 ^c |

^a The figures in brackets are t statistics.

^b The table does not include the parameters of the constant term or the categorical variables by production sector.

^c Not significant at 5%.

approximately two to three times more value-added, gross output value and sales. Their capital stock is 2.6 times that of a non-exporting company. Their labour productivity, measured as value-added per worker, gross value per worker or sales per worker, is 40% to 50% higher than that of non-exporters and this, as might be expected, enables them to pay wages 32% higher on average (45% in the case of white-collar workers and 20% in that of blue-collar workers). The fact that the productivity of occasional exporters is higher than that of non-exporters could be due to the former having more capital per worker (69% more) and greater human capital density. The share of (skilled) white-collar staff in total employment is 9% higher. Lastly, there are also major differences in technology density. Occasional exporters spend 0.06 percentage points more on sales licences than non-exporters.

The comparison between export firms shows that permanent exporters have better characteristics than occasional exporters. The estimates indicate that the parameter α_2 is positive, significant and greater than α_1 . Companies that export permanently generate 86% more employment and between 120% and 130% more output and sales than occasional exporters; they are also between 40% and 50% more productive and pay wages that are 20% to 40% higher. Their capital per worker is almost 60% greater and their human capital density is 11% higher. In this comparison, no statistically significant disparities are observed in expenditure on licences between occasional and permanent exporters.

V

Conclusions

The export performance of Chile since the mid-1980s has been particularly successful, displaying strong growth and a trend towards greater diversification. Nonetheless, as the preceding sections have demonstrated, the external sector is still largely confined to a small number of markets, products and companies. This clearly shows that a number of challenges will have to be met if the country is to attain an export structure that is much more diversified, and thus less exposed to international fluctuations.

In this study we have analysed one aspect that yields important information for improving the trading position of the Chilean economy. We have concentrated on the export behaviour of companies with a view to identifying some of the stylized facts of this, impelled by the knowledge that there is a considerable group of companies which do not succeed in exporting permanently. According to the evidence presented, this problem of staying power is to be found in most export sectors, and is independent of the period studied and the information sources used.

Why might this be important? As has been shown here, companies that export permanently do so to more markets and sell more products internationally. The more new firms are able to establish themselves as exporters, the greater the likely diversification of Chilean exports.

As was shown earlier when the variables relating to initial export performance were compared, the differences between the groups of companies are already evident at the beginning of the period, and not just when all the years studied are averaged out. Table 15 shows that, according to most indicators, permanent exporters were already performing better than occasional exporters and non-exporters in 1990.¹³ These results suggest there is a positive correlation between companies' performance and their export status. The companies that establish themselves in international markets are those that are larger and more productive, possess more physical and human capital and can pay higher wages.

A second aspect that emerges from this study are the considerable differences between company types. In general (and this is consistent with a number of studies in other economies), exporters display better indicators than non-exporters in terms of size, productivity, workforce skills and technological innovation. In this paper we found not only that these differences existed in Chile, but that there were major differences between different types of exporters.

Although the evidence presented is far from establishing a causal relationship, these findings are consistent with the idea that export performance is strongly related to certain characteristics of companies; in other words, it is only "good" companies that succeed in exporting and sustaining a presence in international markets. Thus, when formulating policies to improve the trading position of the Chilean economy, it is necessary to bear in mind that certain characteristics of companies, such as productivity, human capital and technological innovation, are crucial to future exporting success, and that improving these variables is a necessary condition for better export performance.

¹³ The difference from the earlier estimate is that the categorical variable by year is not included, but all the variables being compared are measured for the starting year.

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